

Effects of area, isolation and land use on the functional biodiversity of pollinators and plants in the Maldives islands

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Abstract: Islands can be considered as simplified models of the continental ecosystems and can be used to explore how human activities impact the ecosystem service of pollination. The aim of this project is to analyze the effect of area, isolation and land use on species richness and functional biodiversity of plants and pollinators in Maldives. In order to investigate these aspects, the landscape of the eleven islands was characterized in a GIS environment, quantifying island area and isolation, and the fragmentation of inland green patches. The species richness and functional traits of flowering plants and pollinators were obtained for each island from previous samplings and literature, respectively. The results show that island area positively influences species richness of both pollinators and plants species, in contrast to the small island effect. Furthermore, pollinator and plant species richness are positively related to the fragmentation of inland greens and this has been explained with the theory of intermediate disturbance. Regarding functional traits, some nesting strategies and plants growth forms were exclusive of larger islands, a fact explained by the higher number of habitats in bigger islands. This study demonstrates that patch size and fragmentation shape pollinator and plant biodiversity, with relevant implication for conservation and future mitigation of land uses.